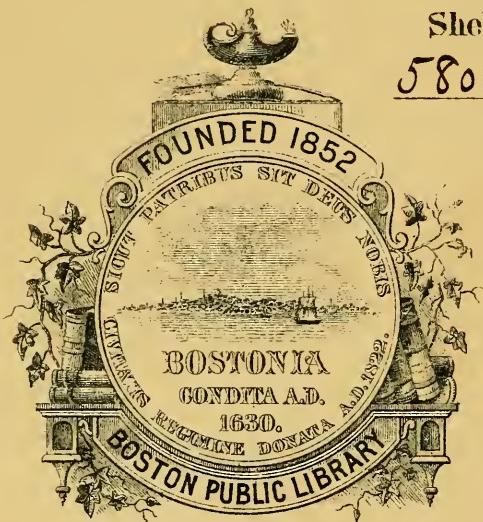


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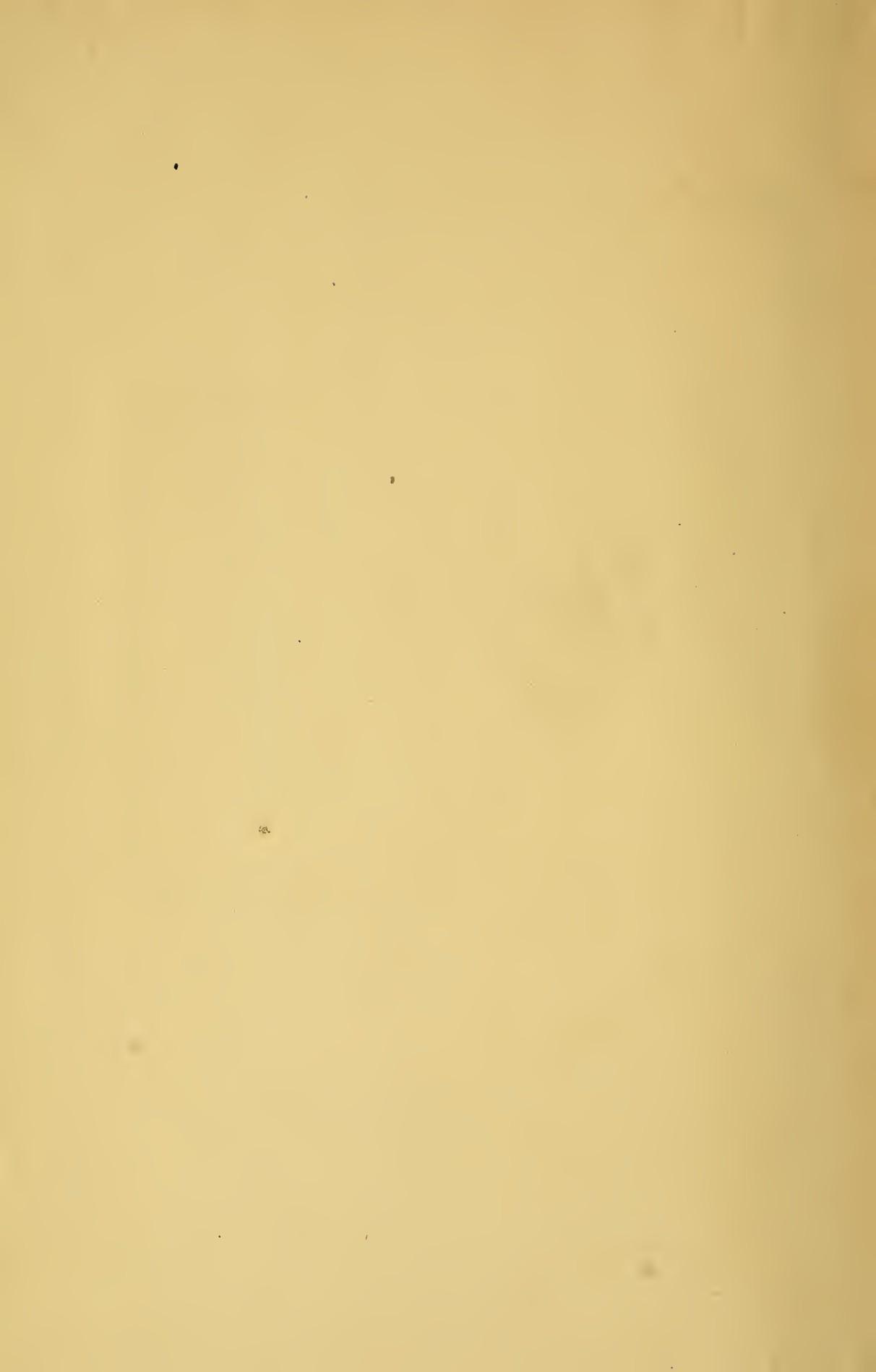
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INAUGURAL ADDRESS

DELIVERED AT

The Hahnemann Medical College,

OF PHILADELPHIA.

AT THE OPENING OF

The Session of 1869-70,

BY

LEMUEL STEPHENS, M.D.,
PROFESSOR OF CHEMISTRY.

PUBLISHED BY THE FACULTY.

PHILADELPHIA:
WILLIAM P. KILDARE, PRINTER, NO. 736 SANSOM STREET.

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INAUGURAL ADDRESS.

GENTLEMEN :

WE are assembled at this time to open our annual course of professional studies, under circumstances calculated to inspire both teacher and student with bright hopes and high resolves. We are all animated with the assurance that this cherished institution has at last outgrown the weaknesses and maladies which so often beset the stage of infancy, of which she has borne an ample share, and with which she successfully struggled with the strong vitality of a healthy child.

To-day, as her frame is thrilled with the vigor and buoyancy of harmonious health, she rejoices to know that the hopes of devoted friends may at length be realized, and their labors rewarded. To-day, when all conflicting counsels among the friends of Homœopathic instruction in this community have at last become consentient and united ; when tolerance of the differences of individual judgment, so far as consistent with the fundamental principles of Homœopathy, has become established among us ; with her cabinets for illustration, already ample, and steadily enlarging ; with her financial condition sound, and affording the means of greater efficiency than we had dared even to hope for a year ago, the Faculty of the Hahnemann Medical College of Philadelphia welcome you here for the prosecution of your professional studies.

I trust you will not deem it arrogance, gentlemen, if I avail myself of this occasion to seek to impress upon you the aims, the qualities, and the principles, which lie at the foundation of true success in the profession which you have chosen. And let me, at the outset, pay a deserved compliment to the character of the students, as a class, of this school of medicine with which you are, or are about to become connected. It is too often the reproach of medical colleges, that a considerable portion

of the students do not apply themselves earnestly and steadily to the studies which they profess to pursue, but allow themselves to be diverted too much by those idle amusements which waste the time and relax the energies that are required to secure thorough and valuable attainments. From this evil, which so often exerts its deleterious influence, on the character of a whole class, this school of Homœopathic medicine, so far as my observation has extended, is entirely free. Our classes have always been characterized by earnestness and devotion to study. By a determination to make the best use of their time and opportunities of instruction ; of all their time and all their advantages. Such a spirit on the part of the class, is the strongest incentive to a faithful preparation on the part of the instructor, and the best reward of his labors. The earnest eye enkindles his inspiration, and patient attention is his sustaining power.

Great patience is an essential requisite for much success in study. Fitful efforts may dazzle with their lightning splendor, but patience, like the steady sunlight, alone has power to unfold the buds of knowledge, and perfect the ripened fruit. Sluggish natures have often a great capacity of endurance, and listlessness and indifference are sometimes mistaken for patience. But the patience of which I speak, is rather a persistent, untiring activity ; that patience which is so prominent an attribute of the Divine Mind, exhibited equally in the physical, as in the moral world ; by which, beneficent changes requiring almost countless ages, are carried on with an unwearying hand ; by which, mountain rocks are disintegrated or dissolved, grain by grain, and carried into the depths of the ocean, to reappear in the fulness of time as the fertile and populated plain. When Sir Isaac Newton was attracting the unrivalled admiration of the scientific world by his sublime demonstrations of the planetary movements, he said of himself that in no respect was he distinguished above a great many other men, except perhaps in being possessed of somewhat more patience than they. The highest kind of patience is never impatient of results. But having done its perfect work, it patiently awaits the recognition

of its merit. When Kepler, one of the earliest modern astronomers, had written out his great discovery, connecting the distances of the planets with the times of their revolution, he says in a letter to a friend: "the die is cast, the book is written, to be read either now or by posterity, I care not which, it may well wait a hundred years for a reader, as God has waited six thousand years for an observer."

In the pursuit of the various studies that pertain to a course of preparation for the medical profession, the patience and the memory would be hopelessly taxed by the innumerable facts presented, if not accompanied by the fullest exercise of the judgment and the reason. Grouping these facts by the laws of similarity and analogy, and connecting these groups by their logical relations. No doubt the most important, not to say the only rule for the successful investigation of nature is, "to remain firm in the conviction that the problem before us is to learn to know phenomena, before seeking for explanations or inquiring after higher causes. As soon as the fact is known in all its relations, it is therein explained, and the problem of science is at an end." And we may fully accept the logical definition of the cause of any phenomenon, as "the antecedent, or the concurrence of antecedents, on which it is invariably and unconditionally consequent." But while I would deprecate that great mistake of the old philosophers, of theorizing in advance of facts, or of forcing facts into the support of the structures of our imagination; still it is possible for us to err on the other side, and in our fear that the maxim "*velle rerum cognoscere causas*," might lead us into error, stubbornly refuse to look for facts whose existence the data before us render probable. It is undoubtedly the office of science, to discover, in the varied phenomena and multiplicity of nature, the unity of the idea from which this endless variety proceeds. She traces facts back to the thought which produced them; and this intelligent manifestation of the creating mind she terms a principle or law. Of such sciences as Natural History and Botany, termed descriptive sciences, it is the object to arrive at a classification of natural objects in accord-

ance with Nature's own plan, or, in other words, to make a true analysis of the thought of the creating mind. No classification conceived upon any other principle can claim the name of scientific. In the difficulty of arriving at the true analysis, an arbitrary arrangement may often be useful, to serve in the mean time the purpose of reference, like the index of a book. Thus in Botany, although the Linnean classification of plants cannot be termed a scientific classification, still it has been of much advantage to the scientific botanist in his task of recognizing and determining the limits of the natural families of plants, enabling him as it does, to understand the observations and researches of others. Linneus was no driveller, nor did he over estimate the value of his work as only a step preparatory to scientific investigation.

We must not confound sound reasoning based on well observed facts, with useless and fanciful speculations. The history of science abounds with instances in which the earnest observer of nature, examining the fragments that lie before him, compasses, with far seeing vision, the whole magnitude of the great thought of which they are but portions, and he knows with a confident assurance whither to direct his steps in the material world, to find the sensible realization of that, which as yet he has only seen with the eye of his mind. Thus it comes that great discoveries have often been preceded by a prophetic confidence in the mind of the discoverer. Look at the great discoverer of this continent, begging from court to court, for the means to enable him to reveal to the world the great fact which he had already seen with his mental vision. "What I admire in Christopher Columbus," says Turgot, "is not that he discovered a new world, but that he started in search of it, trusting to his opinion." Listen to Kepler, in the rhapsody with which he announced his discovery of the great law to which I have before alluded. "What I prophesied two and twenty years ago, as soon as I discovered the five solids among the heavenly orbits, what I firmly believed long before I had seen Ptolemy's Harmonics—what I had promised to my friends in the title of this book, which I named before I was sure of my discovery—what, sixteen years

ago, I urged as a thing to be sought—that for which I joined Tycho Brahe, for which I settled in Prague, for which I have devoted the best part of my life to astronomical contemplations, at length I have brought to light, and recognized its truth beyond my most sanguine expectations." See Cuvier, in the cabinets of Paris, reading from the fossil remains of scattered bones and detached joints, the structure and habits of the animals of which they had at one time formed a part, clothing them again with flesh and enduing them with motion, and like an elder Adam, causing to pass before him the extinct tribes of a former world, and giving to them their names. Hear Le Verrier, rising from his investigations, announce to the French Academy that he requires another planet to complete the solar system, then see the astronomer in Berlin, directing his telescope to the point in space prescribed, discover for him his planet, that the world might have the evidence of the truth of his calculations. Newton pronounced the combustibility of the diamond long before the fact, or the nature of the substance was discovered, from its relations to light; and Davy foresaw in the saline compounds of soda and potash the shining metals which he afterwards discovered. See Liebig, pursuing the principles of his chemistry throughout the domains of the physiologist and the botanist, and startling the doctors of those sciences by the authority with which he expounds to them the laws which they professed to teach. Witness the physicists of the present time, demonstrating the substances of which the sun and stars are composed, measuring the vibrations of light, and the relative size of the ultimate atoms of matter by the simple phenomena of the spectrum analysis.

Facts, then, are not to be valued merely for their own immediate practical usefulness, but because when brought into their natural relation with each other, they induct us into the laws and plans of nature, and thus lead on to new truths and fuller knowledge.

I have made these remarks, and adduced the foregoing examples, to show that at the outset in the pursuit of scientific studies it is of the utmost importance to cultivate the habit, as we gather in facts, of marking care-

fully their relations to other facts, for without this, the efforts of the memory are only an irksome, and comparatively worthless drudgery, while with the accumulation of facts, the mind becomes involved in a labyrinth of perplexity. With our best efforts to comprehend, in the pursuit of the natural sciences, there will inevitably present themselves many details, the import or bearing of which, it is impossible at once to see, but though only a feeble dawning may at times light our path, we know it will brighten with every step of our advance, and as surely lead us to the light of day.

In marking out the course of preparation for the medical profession, do not restrict the path of study within narrow limits. I might almost say that there is no knowledge which will not find its use in the discharge of the multiform duties and responsibilities of your profession. If I were asked when will the physician be able to cure every disease, I should answer, when he knows everything. Beyond the fundamental importance of the *Materia Medica*, you recognize the necessity of a knowledge of Anatomy, of what is known of Physiology and Pathology, and of what skill may be acquired in Surgery. Of Chemistry and Physics you might say, a knowledge is not so necessary, though no doubt desirable. I believe I present about the degree of enlargement to which the horizon of medical ideas in the common ranks of the profession has thus far extended. Gentlemen, we must get a broader comprehension of the scope of medical study. We must learn how superficial is any knowledge of physiology, or of the conditions of health and disease, without an acquaintance with those forces upon which all the changes of organic, no less than inorganic bodies are dependent. These forces are mainly Heat, Light, Electricity, and Molecular force, all perhaps, only different manifestations of one single power by which all the transformations of the material world are effected. The intimate relation of heat and light has always been perceived. A certain intensity of heat gives rise to the phenomenon of light, when that great agent manifests new powers. The electric spark is also heat and light.

A current of electricity passed through a small wire produces intense heat, and on the other hand, heat, applied to a combination of metals reproduces a current of electricity. Molecular, or chemical action, in proportion to its energy, gives manifestations of heat, light, and electricity, and these in turn reproduce molecular action.

It was an instructive experiment that Professor Grove showed in one of his lectures before the London Institute. A prepared daguerreotype plate is enclosed in a box filled with water, having a glass front with a shutter over it. Between this glass and the plate is a gridiron of silver wire; the plate is connected with one extremity of a galvanometer coil, and the gridiron of wire with one extremity of a Breguet's helix—an elegant instrument formed by a spiral coil of two thin bands of different metals soldered together and firmly fastened at the upper end, so that the unequal expansion of the bands indicates slight changes of temperature—the other extremities of the galvanometer and helix are connected by a wire, and the needles brought to zero. As soon as a beam of either daylight or the oxhydrogen light is, by raising the shutter, permitted to impinge upon the plate, the needles are deflected. "Thus, light being the initiating force, we get *chemical action* on the plate, *electricity* circulating through the wires, *magnetism* in the galvanometer coil, *heat* in the thermometric helix, and *motion* in the needles."

That to these forces, thus convertible and correlated with each other, all the transformations of inorganic matter are due, no one will question, but what is their relation to organic life, and what are the living forces?*

A current of electricity passed through a small portion of a motor or sensory nerve, will excite the nervous force in the remainder, while on the other hand, as shown in the case of the torpedo, the nerve force may generate electricity. The forces manifested in the living system are mechanical, thermal, luminous, electric, chemical,

* In the views which I present on this point, I am indebted to the interesting discussions of Dr. Carpenter and Professor Youman on the sources of vital force.

nervous, sensory, emotional, and intellectual. Of the intimate connection and convertibility of some of these I have spoken, and that an intimate relationship exist among them all is evinced by the marvellous dynamic unity of the living organism—the same relation that is found to exist among the purely physical forces. The will is a power which excites nervous force in the brain, and this again excites mechanical power in the muscles. Each force throughout the chain in giving origin to the next is itself expended, or ceases to exist as such, and is transmuted into another form. As the heat of the hammered iron is but transmuted mechanical force, so the impressions on the retina, as well as on the photographic paper, result from the transmuted impulses of light. Nor do sensations terminate with themselves. They excite secretions and muscular action. They increase the action of the heart, and often, the rate of breathing, which in turn produce molecular action and heat. No force is ever lost, but only transformed into another mode of activity. As “ex nihilo nil fit,” so also “nil fit ad nihilum.”

It is in the harmonious action of these forces within the organism, and their ready response to the forces encountered from without, that the state of health or normal life essentially consists. Twenty-five years ago, physiologists were accustomed to attribute all the actions of living bodies, and the formation of organic compounds, for which physics and chemistry could not account, to a hypothetical vital principle, a mysterious agent, whose doings defied scrutiny, and which refused to be made the subject of scientific investigation. But of late years, the empire of this power has been materially abridged. The prevalent opinion was that the evolution of the germ into the complete organism, repeating the type of the parent, and the subsequent maintenance of this organism in its integrity at the expense of materials derived from external sources, were wholly due to a force or power inherent in the germ. The fact is, no evidence can be adduced of any independent motive or constructive power residing in the vital principle of the organism. The truth appears to be, that the germ does not really

supply any force, but is merely the director of the forces from without, and of the forces by these generated within. "This germinal capacity inherent in the organism, by virtue of which it directs those combinations, and the formation of those compounds peculiar to its kind, finds its parallel in the inorganic world in that inherent difference in properties which constitutes the distinction between one substance and another, by virtue of which each comports itself in its own characteristic manner when subjected to new conditions." The actual constructive force in every organism, as appears from a wide observation of the phenomena of life, is supplied by heat, aided by electricity and light, and that peculiar state of molecular activity known as the nascent state. The influence of the first of these forces upon the rate of growth and development is so evident as to have universally attracted the attention of physiologists, although they have rather regarded it as a vital stimulus that called forth the latent power of the germ, than as being itself the power that does the work.

The efficacy and necessity of external heat to commence and carry on the process of the germination of seeds, and the incubation of eggs, to carry on the growth and development of vegetation, and determine the periods and degrees of activity and torpidity of the cold blooded animals, are well known. But while it would be very instructive and conclusive, to trace the influence of external, and the sources of the internal forces which effect the development of these lower organisms, time will only permit us to glance at the sources of the vital force which animates the organisms of the higher animals. Passing, for want of time, over the earliest stage of life, after the period of infancy, the young animal or child is able to maintain its own heat, partly by the force set free in the decomposition and metamorphosis of organic substances derived from its own fabric into simpler binary compounds, and partly by the chemical changes effected on the food. There is evidence that not only during the time of growth, but also in the later stages of life, a part of the required vital activity has to be supplied by a retrograde metamorphosis of a portion

of the constituents of the food, over and above that which serves to generate animal heat. In fact, the quantity of food necessary to keep the body of an adult in its normal condition, is nearly twice that which would be required to supply the waste of the organism as measured by the total amount of the excreta when food is withheld, and this required excess appears to be owing to the necessary descent of a portion of the complex organic constituents of this food to the simpler form of binary compounds, as carbonic acid and water, in order to furnish the nascent molecular energy for the elevation of the remaining portion to the state of living organized tissue. In addition to this source of constructive power, we have also that derived from the constant retrograde metamorphosis of previously formed nervous and muscular tissue, first, in its descent from the condition of living to that of dead matter, involving a liberation of that force that was originally concerned in its organization, and second, the further descent of its complex organic components to the lower plane of mere binary compounds.*

That constructive force is set free and put in action by the decomposition of compound bodies, is well seen in the formation of the proximate principles of vegetable organisms, as starch and albumen. The directive power resident in the germ is no more able to combine the simple elements oxygen, hydrogen, carbon, and nitrogen, into the organic compounds composed of these elements, than the chemist can in his laboratory. Although four-fifths of the atmospheric air is free nitrogen gas, the plant is unable to appropriate to its use a particle out of this abundance, but obtains this, and the other elements, by the decomposition of ammoniacal compounds, and the complex constituents of humus ; by which decomposition, the constructive force is set free, which, under the guidance of the germinal capacity produces the higher organic compounds required.

I have thus glanced at the conversion of heat and molecular force into the vital energy which carries on

* Dr. Carpenter.

the operations of organic life, and I might mention that for some of these the Light force is indispensable. We see it acting on the surfaces of the leaves, generating at the expense of ammonia, carbonic acid, and water, various ternary and quaternary compounds, as chlorophyl and the vegetable oils; and rendering its powerful aid in the increased production of starch and albumen. And Electric force is everywhere at work in the outer world, and in the organic frame; being constantly transmuted into motion, attraction, molecular, and nervous action. "How these metamorphoses take place—how a force existing as motion, heat, or light, can become a power of growth, or a mode of consciousness—how it is possible for aerial vibrations to generate the sensation we call sound, or for the forces liberated by the chemical changes in the brain, to give rise to emotion, these are mysteries which it is impossible to fathom. But they are not profounder mysteries than the transformation of the physical forces into each other." They are not more completely beyond ~~our~~ ^{BOSTON MEDIC} comprehension than the natures of mind and matter. They have simply the same insolubility as all other ultimate questions. They are entitled to take their ^{place as} ~~place as~~ ^{HOMOEOPATHY} ~~one~~ of the uniformities in the order of phenomena."

From these views, so scantily presented, we may feebly gather how important it is for those, whose life labor it is to be to administer to the wants of the human frame; to heal its diseases, and restore so far as may be its failing energies, to learn so much as man has yet discovered, of the nature and laws of those great agencies which are the springs of life, and the controllers of all vital operations.

That no force is ever lost, but propagates itself indefinitely without exhaustion, is a doctrine of infinite moment, and especially to the student of Homœopathy. No matter how minute the electric force with which you approach the insulated revolving disc of the Holtz electrical machine, without contact, and consequently without friction, at once, electric activity is excited over all the plate, and you may continue to draw forth powerful discharges in endless succession, or so long as the motion

of the disc is continued. In a concentrated solution of sodium sulphate, the molecules will retain their amorphous fluid condition if left undisturbed, but if a crystallized fragment of the substance be dropped in, no matter how small, no matter if it consist of only two infinitesimal molecules united with each other by polarity, instantly the polarizing influence is propagated from molecule to molecule, and in a moment the whole body is converted into a solid crystalline mass, and the temperature has become elevated. The propagation of molecular force in the organic frame is no less wonderful. How minute is the gaseous molecule of infectious matter, or of the liquid poison of the spider or the viper, required to spread disease throughout the frame? And yet the contagious molecule is harmless unless it encounters some particle of the living organism in that state of nascent molecular activity which renders it susceptible of receiving, and capable of transmitting the disturbing force. Disease is a condition of abnormal molecular action, and the proper remedy must be molecular in its operation; how minute the effectual remedy may be, who will venture to tell? He whose honored name is claimed by this College with so much pride as foremost in her corps of teachers, will tell you with what vital interest he watches every new development of the laws of force, whether in the form of light, electricity, or molecular action, because it is in the laws that guide the forces of nature that he finds the ultimate ground and reason of medicinal effects.

I trust it will not appear to you that I seek to magnify beyond its true value the importance of physics and chemistry. My colleagues will bear me witness that I only seek to place them before you in that position of commanding rank which the rapid advancement of science at present demands. Even taking the merest practical view of their importance to the physician—in the discharge of his daily duties and responsibilities, a hundred questions will arise, in Hygiene, in Dietetics, and in Pathology, of which I need not show that the intelligent solution requires a knowledge of these sciences.

If you would vindicate the school of medicine with which you are connected, from the intolerant and bigoted judgment with which it has so often been visited by the practitioners of the allopathic school, you will by no means be satisfied with a knowledge of those studies which distinctively constitute Homœopathy, but will aim to become conversant with all those sciences, as Anatomy, Physiology, Physics, and Chemistry, which furnish the solid and broad foundation of medical science and medical skill. I would not present to you so low a motive, as that thereby you might be able to meet your antagonists on their own boasted vantage ground, but that these studies belong no whit the less to your professional education than to theirs. The idea of arming ones' self with the weapons for disputation and victory, or any other extraneous motive, is not the true and healthy stimulus which will bring success in the investigations of science. The motive for study must be intrinsic, in order to be ardent and effectual. In short, the love of knowledge, pure and unalloyed.

To discern in an operation of nature the useful element it may contain does not necessarily imply a comprehension of the idea from which the operation proceeds. To discover this idea, is the sole end of scientific inquiry. As Kepler expresses it, "it is an effort of the human mind, to think the thoughts of God after him." It offers no other delight, than the great delight, natural to the mind, at the discovery of new truth. The useful arts are pursued with reference to a physical end to be gained. The rewards are material, the rewards of science are purely spiritual, and gratify the highest desires of our nature. For fame, and for bread, men have done great things, but not the greatest. As the eyes of the body are only suited to see things in perfect clearness by the light of the sun, so is the vision of the mind perfect only in the light of truth. Truth is the daylight of the mind, and when not illumined by the orb of day, it gropes about by the ineffectual light of earthly fires. Truth is the soul's first love. She may waver, and wander away to other loves, but the love of truth is woven in her nature, and can never be extinguished.

She may be tempted to hold weak dalliance with other suitors who press around her, but in the arms of truth alone, she gives herself away. Her favors she may bestow on unworthy objects, but her great sacrifice 'none but truth dare claim.'

Gentlemen, as you enter the precincts of science, I can give you no higher advice than that you seek to be possessed of this, the true spirit of scientific investigation. It is the only vantage ground from which the mind of man can look with much discernment into the works of the Creator. In the words of Guizot, "to perform his task in the world well, man must look down upon it from some higher point, and if he stand but on the level of his occupation, he soon degenerates, and becomes incapable of fulfilling that occupation as he ought."

Trust firmly in your own thoughts, and dare resolutely to act upon them without fear of responsibility. Weakness of conduct is but the consequence of weakness of conviction, for the strongest of all the springs of human action, is human belief. With the love of truth for your guiding star, you shall never be ashamed of your errors. Not that you are safe from error, but you are sure of a return to the right. For the love of truth is the magnet of the soul. A thousand influences may make it vibrate from side to side, but it never comes to rest, but in the true direction. "Show me the man," says Liebig, "who makes no mistakes, and I will show you a man who has done nothing." There are men, whose minds never oscillate. They are as fixed in their opinions as the everlasting hills. And the world often praises these men for their consistency. Yes; theirs is the unwavering, invariable consistency of the magnet rusted in its socket.

Come then, Gentlemen, to the study of science with free minds and true hearts, and in the beautiful language of Milton, "we will lead you to a hillside, laborious, indeed, in the first ascent, but else, so smooth, so green, so full of goodly prospects, and melodious sounds on every side, that the harp of Orpheus were not so charming."

T H E
Hahnemann Medical College
OF
PHILADELPHIA.

Session of 1869-70.

No. 1105 Filbert Street.

FACULTY OF MEDICINE

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"In certis unitas, in dubiis libertas, in omnibus charitas."

The preliminary course will commence September 27th, and continue until the regular course, which begins on the second Monday in October.

All communications should be addressed to C. HERING, M. D., Dean, No. 114 North Twelfth Street; or to R. Koch, M. D., Registrar, No. 33 North Twelfth Street, Philadelphia.

